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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------|-------------|------------------------|---------------------|------------------|
| 10/618,264 | 07/14/2003 | Jan Evert Van Der Werf | 081468-0304800 | 3943 |
| 909 | 7590 | 01/12/2005 | EXAMINER | |
| PILLSBURY WINTHROP, LLP | | | KIM, PETER B | |
| P.O. BOX 10500 | | | ART UNIT | |
| MCLEAN, VA 22102 | | | PAPER NUMBER | |
| | | | 2851 | |
| DATE MAILED: 01/12/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/618,264 | Applicant(s) VAN DER WERF ET AL. | |
| | Examiner Peter B. Kim | Art Unit 2851 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in-condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>72003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

The drawings are objected to because AB2 disclosed in para 0038 is not shown in Fig. 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1, 4, 9, 13 and 16 are objected to because of the following informalities: Regarding Claims 1 and 13, “reflector alignment system” and “reflector aligning means” are not clear. It is not clear if the alignment system and means include a reflector or the system and means are used to align reflectors. Further, the structural relationship between reflectors and lithographic projection apparatus is not clear in the claims. Regarding Claims 4, 9, and 16, it is

Art Unit: 2851

not clear how running fringe pattern formed by interference between two beams intersecting is used in alignment. Para 0042 of the disclosure does not provide sufficient enablement to use or make the invention. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 6, 8, 10, 11, 13, 14, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Oshino (6,208,707).

Oshino discloses a lithographic projection apparatus (Fig. 1-3) and a device manufacturing method comprising an illuminator (1) to provide a projection beam; a support (5) to support a patterning device (4); a substrate table (7) configured to hold a substrate (6), a projection system (31, 32, 33, 34) and a reflector alignment system or means (81, 82, 83, 84, 85, 86) to direct an alignment beam of radiation through the projection system (Fig. 1, 2) to measure positions of a first reference mark provided on the patterning device side and the second reference mark provided on the substrate side where the reference marks are in planes congruent with object and image planes of the projection system (col. 4, lines 47-59). Oshino also discloses alignment system or means with smaller numerical aperture than the projection system (col. 5, lines 12-24), and controller to control a position of at least one of the patterning device and the substrate to compensate for or alleviate errors detected by the reflector alignment system (col. 7, line 40 – col. 8, line 23).

Claims 1, 7, 8, 12, 13, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi (4,856,905).

Nishi discloses a lithographic projection apparatus (Fig. 2, 6) and a device manufacturing method comprising an illuminator (LAo) to provide a projection beam; a support (18) to support a patterning device (R); a substrate table (22, 86) configured to hold a substrate (W), a projection system (20) and a reflector alignment system or means (108, 114, 110 etc.) to direct an alignment beam of radiation through the projection system (Fig. 2, 6) to measure positions of a first reference mark provided on the patterning device side and the second reference mark provided on the substrate side where the reference marks are in planes congruent with object and image planes of the projection system (RM and FM). Nishi also discloses the third and fourth reference marks (Fig. 6, left alignment system).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshino in view of Nishi et al. (Nishi) (2004/0032575).

Oshino discloses the claimed invention as discussed above; however, Oshino does not disclose the reference marks comprising gratings. Nishi discloses in para 0280 reference marks comprising grating. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide grating shaped marks to the invention of Oshino in order to

Art Unit: 2851

account for substrates and patterning devices with rough surfaces as taught by Nishi in para 0280.

Claims 4, 9, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshino in view of Dirksen et al. (Dirksen) (5,485,272).

Oshino discloses the claimed invention as discussed above; however, Oshino does not disclose reference mark comprising a running fringe pattern formed by interference between two beams intersecting at an angle. Dirksen discloses reference mark comprising fringe pattern formed by interference between two beams (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the reference mark of Dirksen to the invention of Oshino in order to provide very compact and stable system as taught by Dirksen in col. 3, line 65 – col. 4, line 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2851

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Peter B. Kim", is positioned above the printed name.

Peter B. Kim
Primary Examiner
Art Unit 2851

January 4, 2005